Explaining Delaware's Wetland Mapping

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Delaware Wetlands

Purify Provide Protect

www.dnrec.delaware.gov/admin/delawarewetlands

Jurisdictional Wetland Definition

Corps wetland definition (regulatory):

Wetlands are those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Wetland definitions vary slightly between federal Agencies (EPA, USFWS, Corps)

Federal delineation manual

Wetland Mapping Criteria

Generally use the USFWS definition (NWI is within USFWS):

Approved national standard for wetland mapping, monitoring, and data reporting -- Federal Geographic Data Committee (FGDC). Uses the FWS Wetland Classification System (Cowardin et al., 1979) to determine wetland vs. non wetland, vegetated or un-vegetated, and wetland type.

For wetland mapping: based on ecological perspective – not attempting to map jurisdictional wetlands – but majority of mapped areas are likely jurisdictional.

Delaware Wetland Mapping: How is it done?

Comply with federal mapping standards

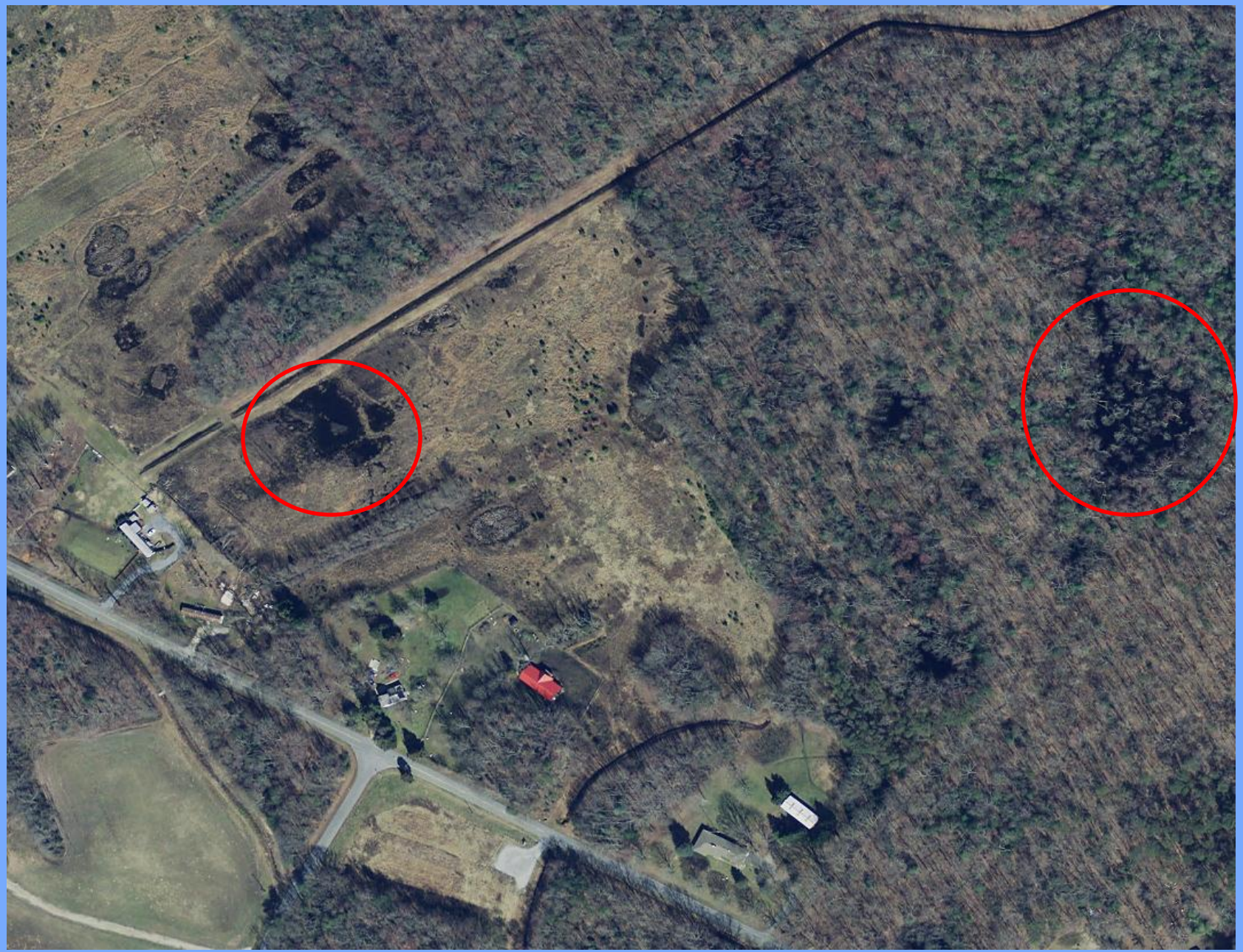
Begin with most recent "leaf off" aerial imagery/photography (2007)

Photointerpretation of "wet signature"

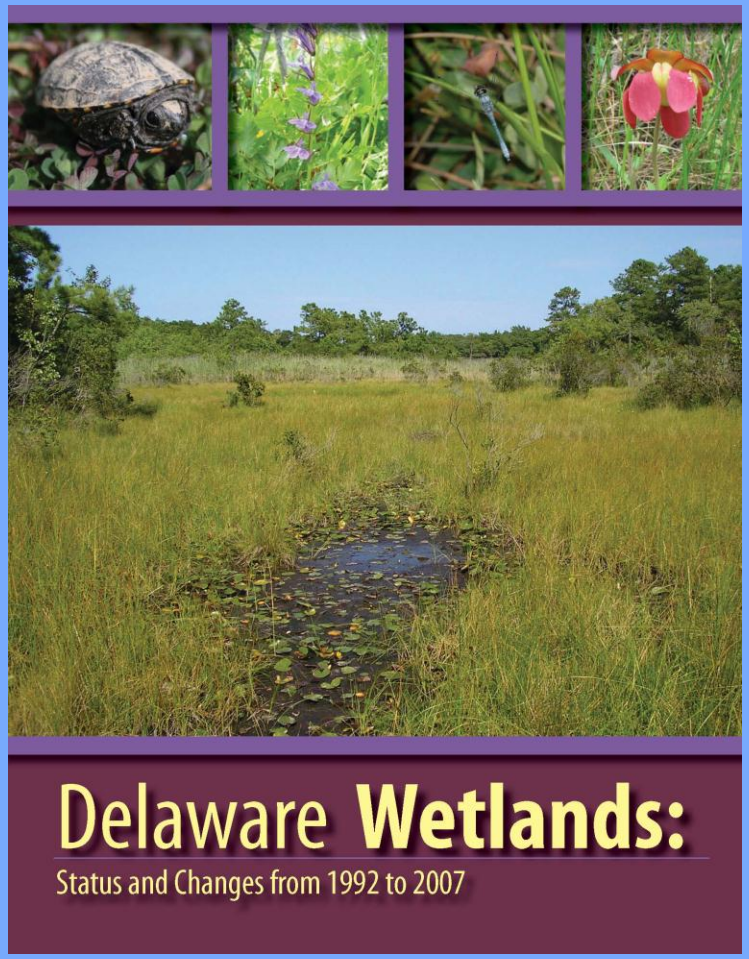
Supporting data:

- USDA hydric soils (areas that are >80% hydric)
- Topography
- Vegetation types
- Hydrography

Wet Signature – Areas of Observable Wet Conditions



Delaware Wetland Mapping:
Mapping Facts



The 2007 wetland maps are the most accurate to date

The only way to track wetlands statewide

Both State and Federal (NWI) wetland maps are now one and the same

Used to produce Status and Changes Report

Delaware Wetland Mapping: Mapping Facts (cont.)

More conservative mapping method creates more accurate maps than past efforts

Created the "**H-Wetland**" subset, and added functional classification

H-Wetlands are areas with hydric soils that have natural vegetation, but lacked a 'wet signature'

***H-wetlands should be further verified on the ground to determine if they are wetland*.

H-Wetland Example

Delaware Wetland Mapping: QA/QC

During mapping process, reviewed areas as completed by the contractor.

Field visits to various sites for verification as wetland

Verified:

- Seasonally saturated wetlands (drier wetlands)
- H-wetlands
- In both situations, roughly 70% were verified as wetland

Delaware Wetland Mapping
Statistics

The mapping identified 320,076 acres of wetland

Includes approximately 20,000+ acres of large open water such as the Inland Bays

Includes 62,291 acres of H-wetlands

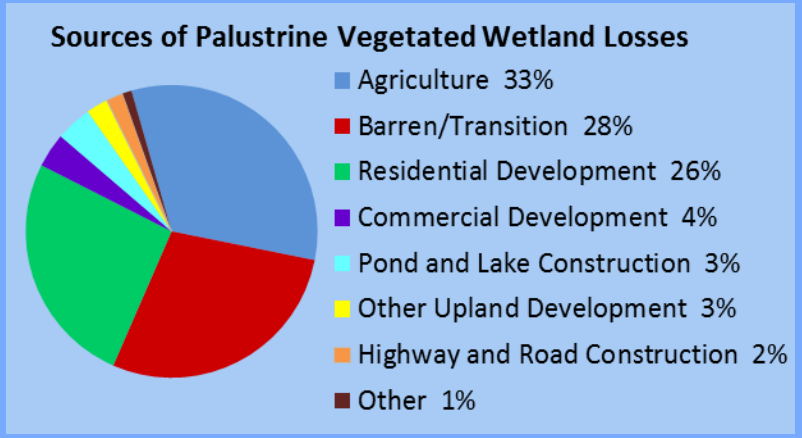
Did not map ‘farmed wetlands’

Delaware Wetlands – Changes 1992 to 2007

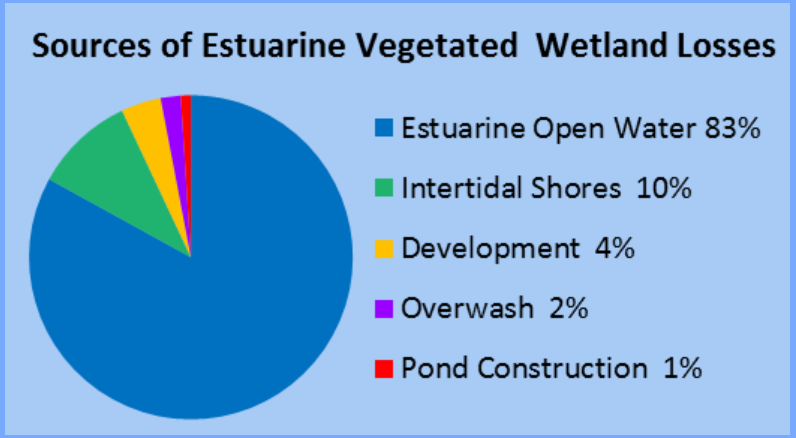
Gross loss 3,894 acres *vegetated wetlands*

Gross gain 768 acres

Net loss of 3,126 acres



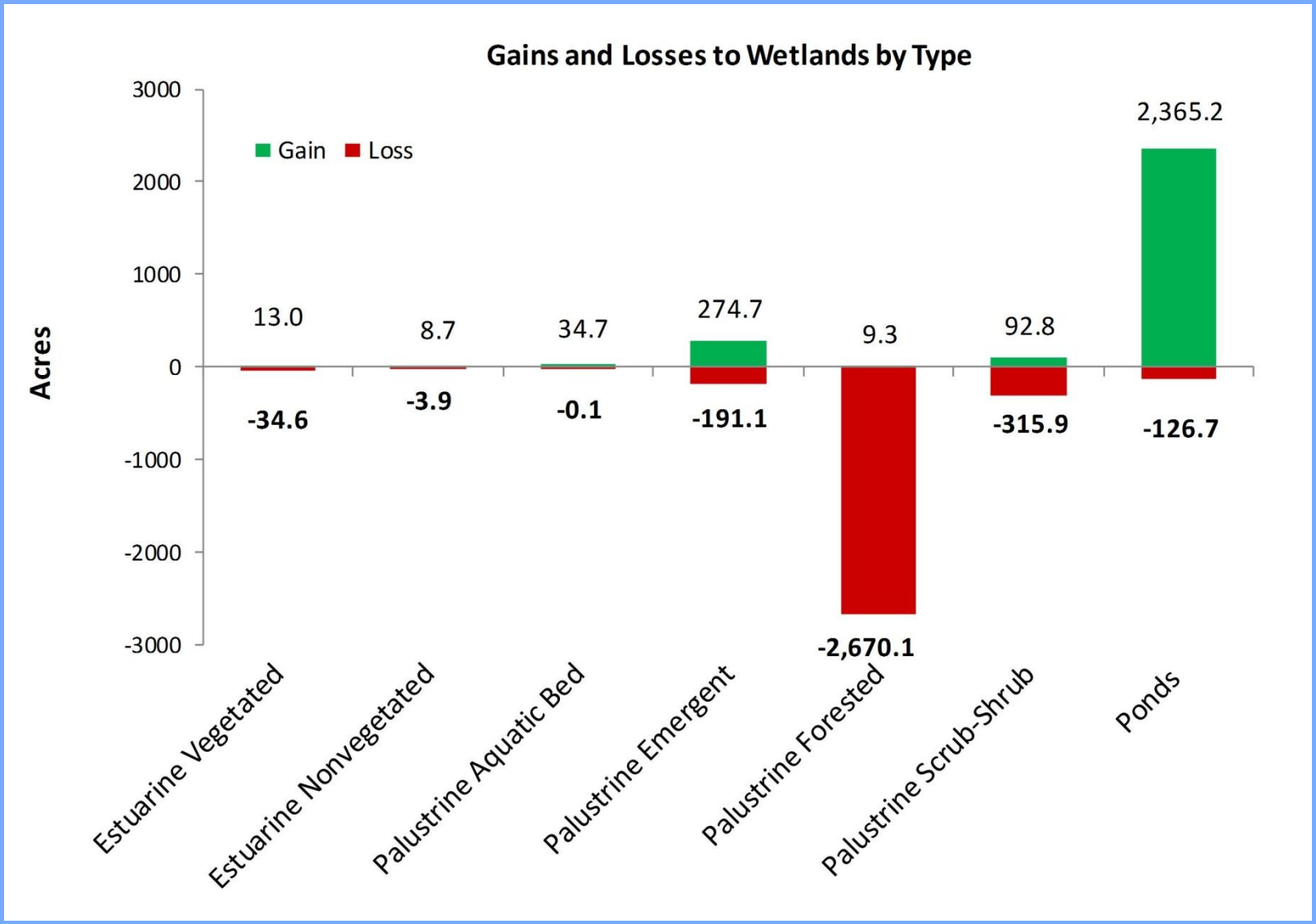
92% of all lost were non-tidal wetlands (mostly forested headwaters)



Pond gain of 2,285 acres

65% of created ponds came from ag land being converted to development

Delaware Wetlands – Changes 1992 to 2007



NOTE: Ponds do not provide near as many functional benefits as natural forested wetlands.

Delaware Wetland Mapping: Loss Verification

Had multiple meetings with the Corps and EPA to discuss loss results and to verify if these losses were permitted, exempt from regs, not-regulated, or unpermitted losses.

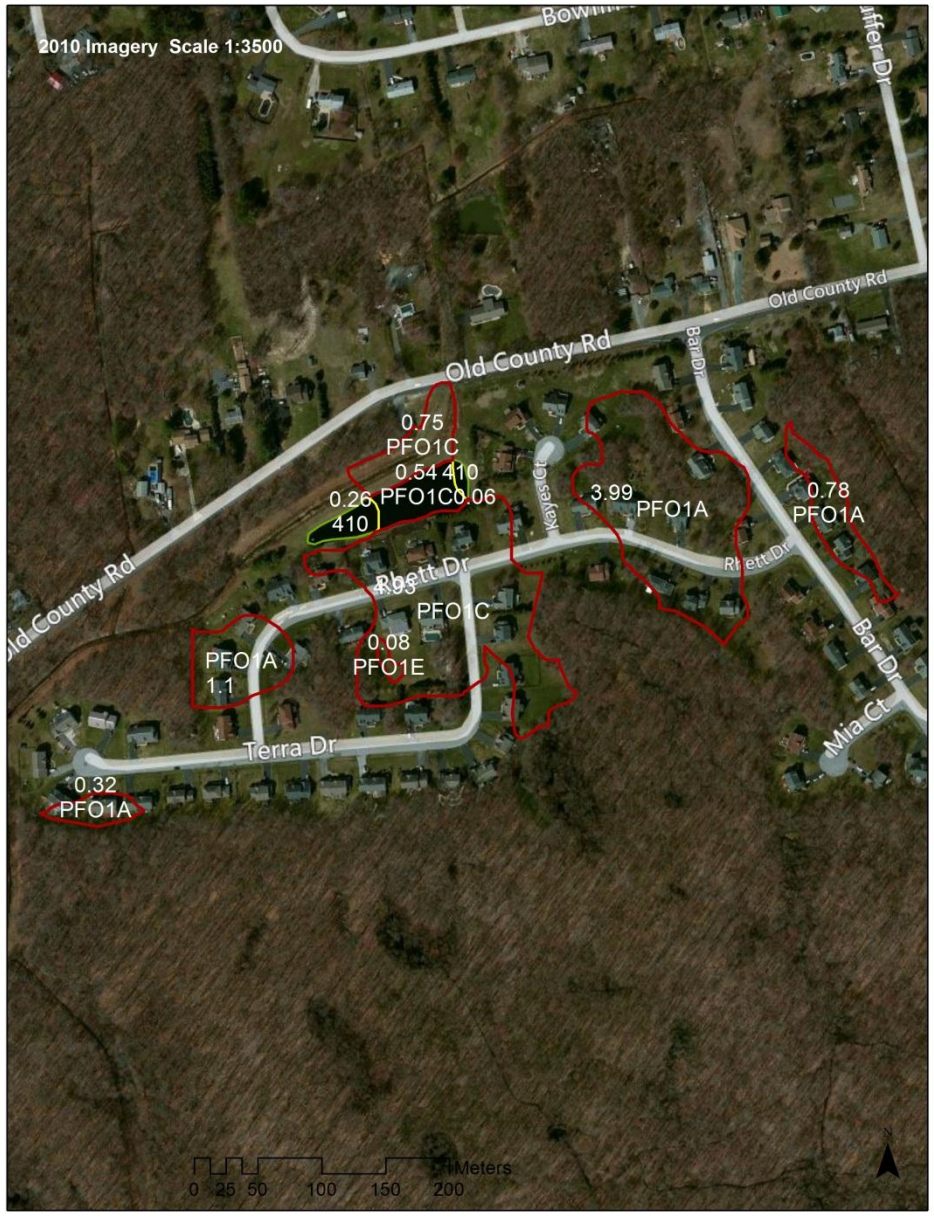
Results were mixed. Information is not consistently placed in the Corps database.

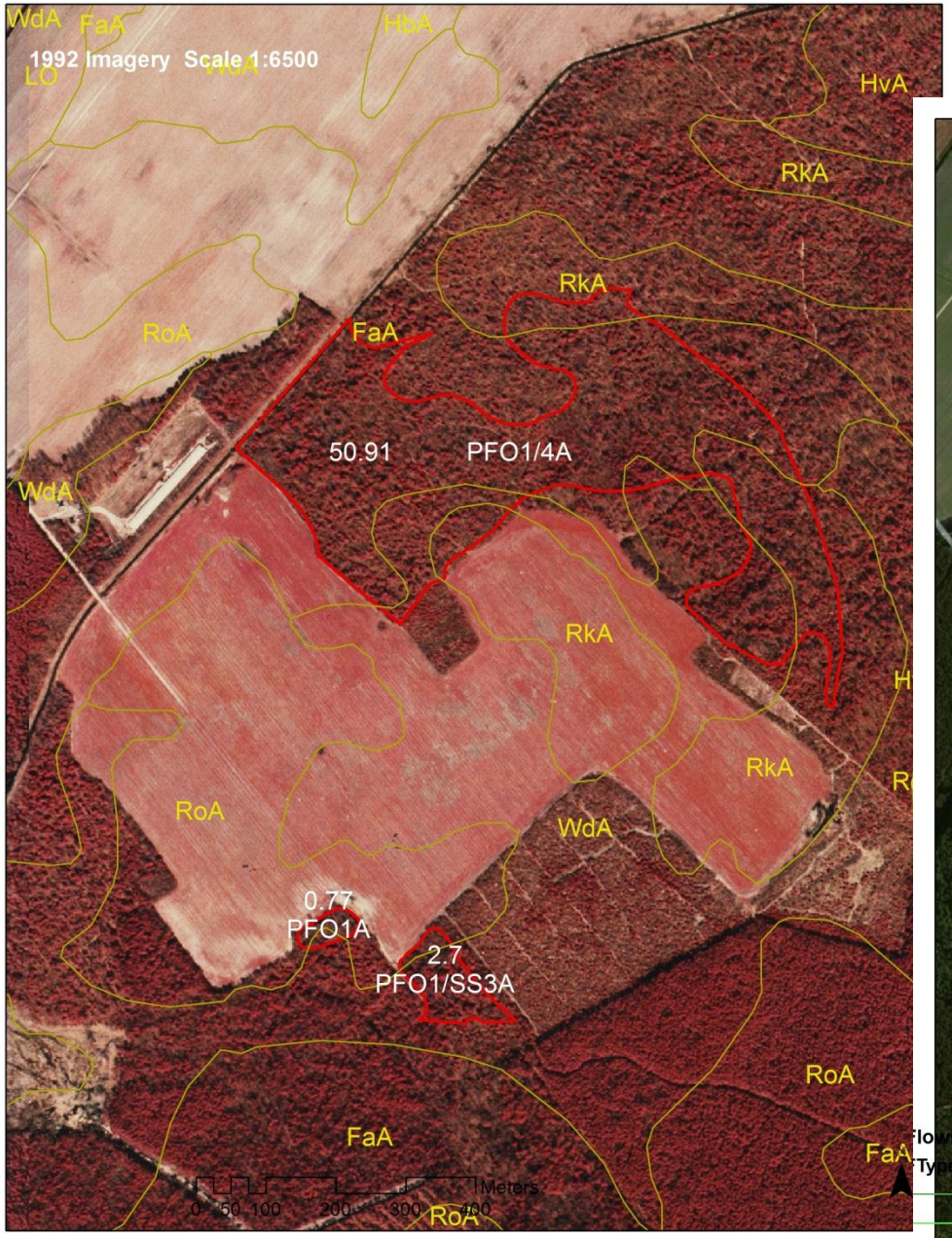
Had information on some sites, but there were no records for other sites.


1992 Imagery Scale 1:1,500
700
0.21
700
PsA
1.25 PEM1A
GoA
HvA
PEM1C
PsA
4.53
Soils
DE_Wetland_Trends_92_07
Change
Gain
Loss
2007 wetlands
PsA
0.1
410
0.59
410
HvA
0.1
410
0 10 20 60 80
Meters


2007 Imagery Scale 1:2,000
700
0.21
0.15
700
PsA
GoA
700
0.2
1.25
PEM1A
HvA
PEM1C
PsA
4.53
Soils
DE_Wetland_Trends_92_07
Change
Gain
Loss
2007 wetlands
0.1
410
0.59
410
PsA
GoA
0.1
410
PFO1/SS3A
0.65
HsA
0 15 30 60 90 120
Meters
N

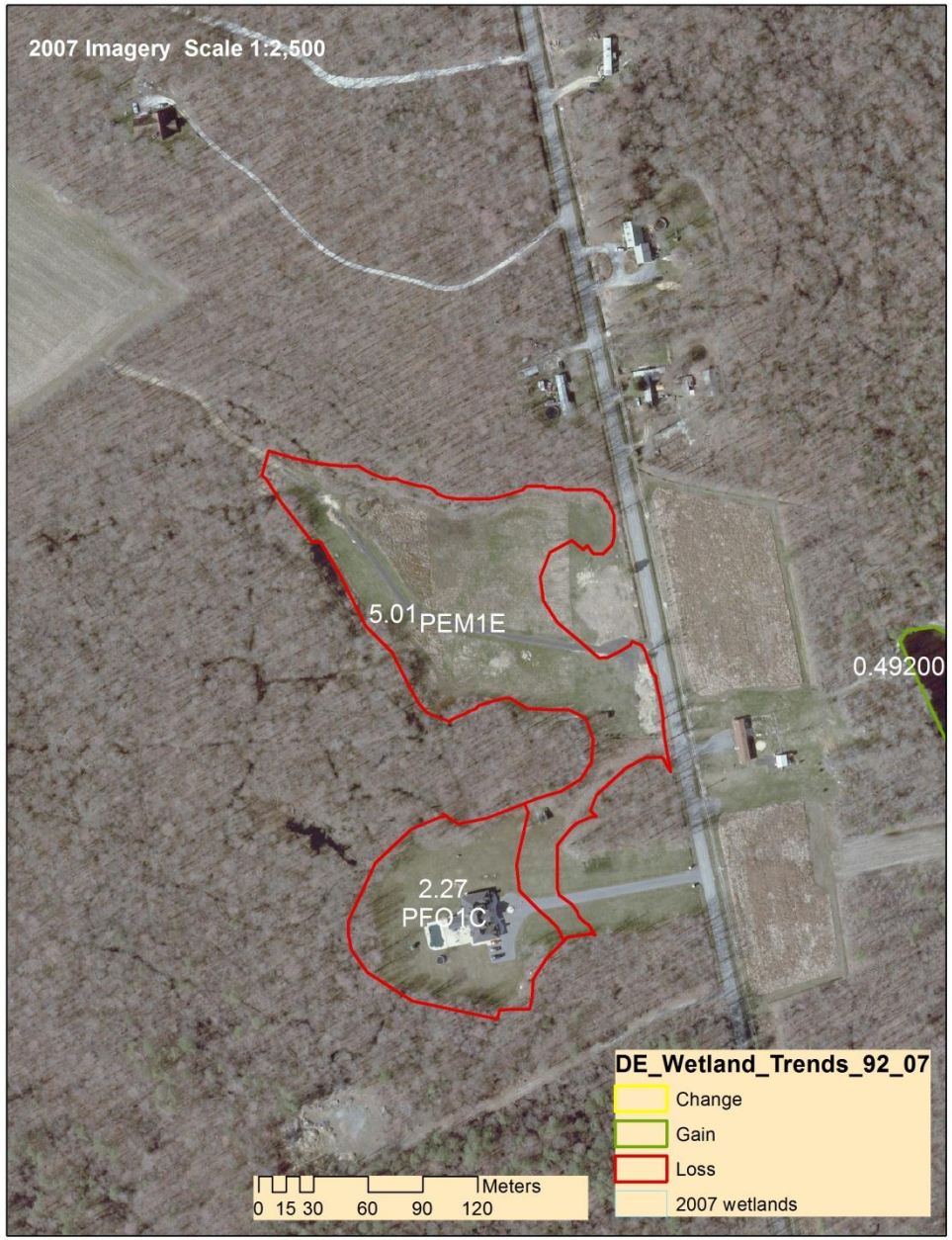

1992 Imagery Scale 1:3500
0.75
PFO1C
0.54 410
PFO1C0.06
0.26
410
3.99
PFO1A
0.78
PFO1A
4.93
PFO1C
0.08
PFO1E
PFO1A
1.1
0.32
PFO1A
0 25 50 100 150 200
Meters


2010 Imagery Scale 1:3500
Old County Rd
Old County Rd
Old County Rd
Bar Dr
Rhett Dr
Rhett Dr
Terra Dr
Mia Ct
Bar Dr
0.75
PFO1C
0.54 410
0.26
410
PFO1C0.06
3.99
PFO1A
0.78
PFO1A
4.93
PFO1C
0.08
PFO1E
PFO1A
1.1
0.32
PFO1A
0 25 50 100 150 200
Meters


1992 Imagery Scale 1:6500
WdA
FaA
HbA
LO
HvA
RkA
RoA
FaA
RkA
50.91
PFO1/4A
WdA
RkA
RkA
RoA
WdA
0.77
PFO1A
2.7
PFO1/SS3A
RoA
FaA
FaA
RoA
0 50 100 200 300 400
Meters


2010 Imagery Scale 1:7000
50.911332
PFO1/4A
0.773443
PFO1A
2.703054
PFO1/SS3A
Loss_Wetlands_with_Details
Corps_permits_with_Real_Lat_longs_removed_duplicates
Flowlines
Type
ArtificialPath
CanalDitch
Connector
0 40 80 160 240 320
Meters


1992 Imagery Scale 1:2,500
WoA
CoA
5.01
PEM1E
FgA
2.27
PFO1C
WdA
HnB
CoA
DE_Wetland_Tre
Change
Gain
Loss
2007 wetlands
0 15 30 60 90 120
Meters


2007 Imagery Scale 1:2,500
5.01
PEM1E
0.49200
2.27
PFO1C
DE_Wetland_Trends_92_07
Change
Gain
Loss
2007 wetlands
0 15 30 60 90 120
Meters


1992 Imagery Scale 1:1500
120
GrA
PFO1A
0.47
HvA
1.22 PSS1E
GrB
GrA
Meters
0 10 20 40 60 80


2007 Imagery Scale 1:1500
120
0.09
GrA
PFO1A
0.47
BuA
HvA
1.22 PSS1E
GrB
GrA
BuA
Meters
0 10 20 40 60 80
N

Wetland Examples

Not always wet during the year

Delaware Wetlands

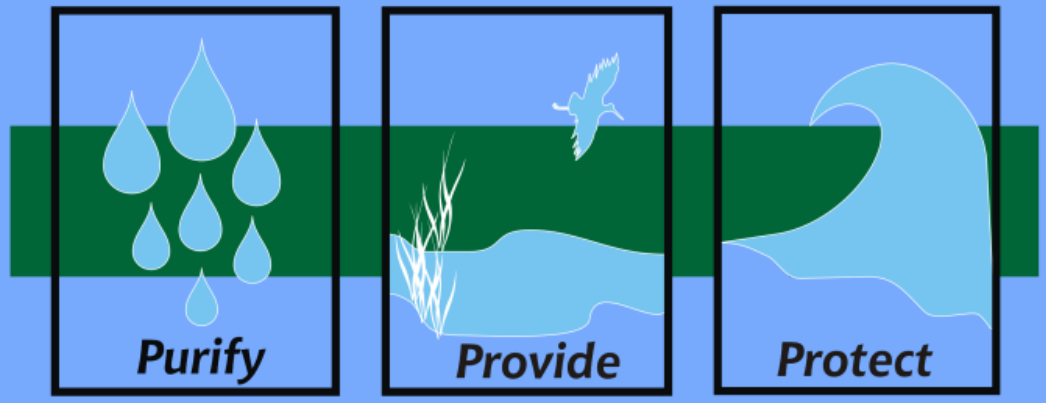
Wetland mapping is the most accurate method to track changes to wetlands statewide

Mapping does not predict the location of all jurisdictional wetlands

Wetland maps are for guidance as to where wetlands exist and are used often for resource managers and for land use planners

Help determine how best to conserve and protect the functions/services that wetlands provide (i.e. flood control, filtering and cleaning waters, etc.)

Delaware Wetlands



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